

We claim:

1. An interior rear viewing and sensing system for a vehicle having a windshield and a button connected thereto comprising:

a sensor configured to be connected to the windshield and be located adjacent the button; and

an interior rearview mirror system configured to be connected to the button and to cover the sensor;

the sensor being configured to be operatively coupled to the windshield independent of the interior rearview mirror system;

wherein at least a portion of the sensor is no longer operatively coupled to the windshield as the interior rearview mirror system is detached from the button.

2. The interior rear viewing and sensing system of claim 1, wherein:

the sensor comprises a first section and a second section, the first section being configured to be connected to the windshield and the second section being removably connected to the first section; and

the second section is the at least the portion of the sensor, whereby the first section remains operatively coupled to the windshield and the second section is no longer operatively coupled to the windshield as the interior rearview mirror system is detached from the button.

3. The interior rear viewing and sensing system of claim 2, wherein:

the second section of the sensor and the interior rearview mirror system include facing ledges adapted to engage as the interior rearview mirror system is detached from the button, whereby the ledge of the interior rearview mirror system engages the ledge of the second section of the sensor to disconnect the second section of the sensor from the first section of the sensor as the interior rearview mirror system is detached from the button.

4. The interior rear viewing and sensing system of claim 3, wherein:
the second section of the sensor includes one ledge and the interior rearview mirror system includes one ledge.
5. The interior rear viewing and sensing system of claim 3, wherein:
the second section of the sensor includes a plurality of ledges and the interior rearview mirror system includes a plurality of ledges.
6. The interior rear viewing and sensing system of claim 2, wherein:
the first section is configured to extend no further than 10 mm from the windshield.
7. The interior rear viewing and sensing system of claim 1, wherein:
the at least a portion of the sensor and the interior rearview mirror system include facing ledges adapted to engage as the interior rearview mirror system is detached from the button, whereby the ledge of the interior rearview mirror system engages the ledge of the sensor as the interior rearview mirror system is detached from the button, whereby the at least the portion of the sensor is no longer operatively coupled to the windshield as the interior rearview mirror system is detached from the button.
8. The interior rear viewing and sensing system of claim 7, wherein:
the at least a section of the sensor includes one ledge and the interior rearview mirror system includes one ledge.
9. The interior rear viewing and sensing system of claim 7, wherein:
the at least a section of the sensor includes a plurality of ledges and the interior rearview mirror system includes a plurality of ledges.
10. The interior rear viewing and sensing system of claim 1, wherein:
the at least a portion of the sensor is the entire sensor.

11. The interior rear viewing and sensing system of claim 1, wherein:
 - the sensor is configured to be pressed against the windshield by at least one retainer extending from the button; and
 - the interior rearview mirror system is configured to engage the at least one retainer of the button as the interior rearview mirror system is detached from the button to disengage the at least one retainer from the sensor, whereby the at least the portion of the sensor is no longer pressed against the windshield as the interior rearview mirror system is detached from the button.
12. The interior rear viewing and sensing system of claim 1, wherein:
 - the sensor is configured to be operatively coupled to the windshield by being pressed against the windshield; and
 - wherein the at least a portion of the sensor is no longer pressed against the windshield as the interior rearview mirror system is detached from the button.
13. The interior rear viewing and sensing system of claim 1, wherein:
 - the sensor is configured to be operatively coupled to the windshield by being connected to the windshield; and
 - wherein the at least a portion of the sensor is no longer connected to the windshield as the interior rearview mirror system is detached from the button.
14. The interior rear viewing and sensing system of claim 1, wherein:
 - the interior rearview mirror system comprises a mirror housing and a mounting bracket, the mounting bracket being configured to be connected to the button.
15. The interior rear viewing and sensing system of claim 14, wherein:
 - the mounting bracket is configured to disconnect from the button when the mounting bracket is subjected to a force no greater than 400 N (90 pounds) in any direction that is not more than 45° from a forward longitudinal direction of motion of the vehicle.

16. The interior rear viewing and sensing system of claim 15, wherein:
the at least a portion of the sensor and the mounting bracket include facing ledges adapted to engage as the interior rearview mirror system is detached from the button, whereby the ledge of the mounting bracket engages the ledge of the sensor as the interior rearview mirror system is detached from the button, whereby the at least the portion of the sensor is no longer operatively coupled to the windshield as the interior rearview mirror system is detached from the button.
17. The interior rear viewing and sensing system of claim 16, wherein:
the at least a portion of the sensor includes a plurality of ledges and mounting bracket includes a plurality of ledges.
18. The interior rear viewing and sensing system of claim 17, wherein:
the ledges of the mounting bracket are located on ribs extending from the mounting bracket.
19. The interior rear viewing and sensing system of claim 17, wherein:
the mounting bracket includes a pair of hooks configured to extend into grooves in the button to connect the interior rearview mirror system to the button.
20. The interior rear viewing and sensing system of claim 17, wherein:
the ledges of the mounting bracket are located on spring clips extending from the mounting bracket.
21. The interior rear viewing and sensing system of claim 20, wherein:
the mounting bracket includes a mounting foot; and
the spring clips include shelves for snapping the spring clips onto the mounting foot.
22. The interior rear viewing and sensing system of claim 16, wherein:
a first one of the mounting bracket and the sensor includes a T-shaped member;

a second one of the mounting bracket and the sensor includes a T-shaped slot configured to accept the T-shaped member therein; and
the ledges are located on the T-shaped member and the T-shaped slot.

23. The interior rear viewing and sensing system of claim 22, wherein:
the mounting bracket includes the T-shaped member; and
the sensor includes the T-shaped slot.

24. The interior rear viewing and sensing system of claim 22, wherein:
the sensor includes the T-shaped member; and
the mounting bracket includes the T-shaped slot.

25. The interior rear viewing and sensing system of claim 14, further including:
a mounting bracket cover extending over the mounting bracket;
wherein the at least a portion of the sensor and the mounting bracket cover include facing ledges adapted to engage as the interior rearview mirror system is detached from the button, whereby the ledge of the mounting bracket cover engages the ledge of the sensor as the interior rearview mirror system is detached from the button, whereby the at least the portion of the sensor is no longer operatively coupled to the windshield as the interior rearview mirror system is detached from the button.

26. The interior rear viewing and sensing system of claim 1, wherein:
the sensor is a rain sensor.

27. The interior rear viewing and sensing system of claim 1, wherein:
the sensor is configured to be surrounded by the button.

28. A viewing system for a vehicle having a windshield, a button connected thereto and a sensor being retained against the windshield by at least one retainer, the viewing system comprising:

an interior rearview mirror system configured to be connected to the button and be adjacent the sensor, the interior rearview mirror system including a mechanism configured to engage the at least one retainer;

wherein the interior rearview mirror system does not bias the sensor against the windshield when the interior rearview mirror is connected to the button; and

wherein the mechanism is configured to engage the retainer as the at least one interior rearview mirror system is detached from the button to thereby pull the at least one retainer away from the sensor, thereby allowing the sensor to fall from the windshield.

29. The viewing system of claim 28, wherein:

the interior rearview mirror system is configured to engage the at least one retainer extending from the button and pressing the sensor against the windshield as the interior rearview mirror system is detached from the button to disengage the at least one retainer from the sensor, whereby the at least the portion of the sensor is no longer pressed against the windshield as the interior rearview mirror system is detached from the button.

30. The viewing system of claim 28, wherein:

the interior rearview mirror system comprises a mirror housing and a mounting bracket, the mounting bracket being configured to be connected to the button.

31. The viewing system of claim 30, wherein:

the mounting bracket disconnects from the button when the mounting bracket is subjected to a force no greater than 400 N (90 pounds) in any direction that is not more than 45° from a forward longitudinal direction of motion of the vehicle.

32. The viewing system of claim 28, wherein:

the interior rearview mirror is configured to cover the sensor.

33. The viewing system of claim 28, wherein:

the interior rearview mirror is configured to be connected to the button and be adjacent the sensor when the button and the sensor are not integral.

34. A viewing system for a vehicle having a windshield and a button and a sensor being connected to the windshield, the viewing system comprising:

an interior rearview mirror system configured to be connected to the button and be adjacent the sensor, the interior rearview mirror system including a mechanism configured to engage the sensor;

wherein the interior rearview mirror system does not bias the sensor against the windshield when the interior rearview mirror is connected to the button; and

wherein the mechanism is configured to engage at least a portion of the sensor as the interior rearview mirror system is detached from the button to thereby pull the at least the portion of the sensor away from the windshield.

35. The viewing system of claim 34, wherein:

the interior rearview mirror system includes ledges adapted to engage ledges of the sensor as the interior rearview mirror system is detached from the button, whereby the at least the portion of the sensor is no longer operatively coupled to the windshield as the interior rearview mirror system is detached from the button.

36. The viewing system of claim 34, wherein:

the interior rearview mirror system comprises a mirror housing and a mounting bracket, the mounting bracket being configured to be connected to the button.

37. The viewing system of claim 36, wherein:

the mounting bracket include at least one ledge adapted to engage at least one ledge of the sensor as the interior rearview mirror system is detached from the button, whereby the at least the portion of the sensor is no longer operatively coupled to the windshield as the interior rearview mirror system is detached from the button.

38. The viewing system of claim 37, wherein:
the mounting bracket includes a plurality of ledges.
39. The viewing system of claim 38, wherein:
the ledges of the mounting bracket are located on ribs extending from the mounting bracket.
40. The viewing system of claim 38, wherein:
the mounting bracket includes a pair of hooks configured to extend into grooves in the button to connect the interior rearview mirror system to the button.
41. The viewing system of claim 38, wherein:
the ledges of the mounting bracket are located on spring clips extending from the mounting bracket.
42. The viewing system of claim 41, wherein:
the mounting bracket includes a mounting foot; and
the spring clips include shelves for snapping the spring clips onto the mounting foot.
43. The viewing system of claim 37, wherein:
the mounting bracket includes either a T-shaped member configured to be accepted in a T-shaped slot of the sensor or a T-shaped slot configured to a T-shaped member of the sensor.
44. The viewing system of claim 43, wherein:
the mounting bracket includes the T-shaped member.
45. The viewing system of claim 43, wherein:
the mounting bracket includes the T-shaped slot.

46. The viewing system of claim 36, further including:
a mounting bracket cover extending over the mounting bracket;
wherein the mounting bracket cover include facing ledges adapted to engage ledges of the sensor as the interior rearview mirror system is detached from the button, whereby the at least the portion of the sensor is no longer operatively coupled to the windshield as the interior rearview mirror system is detached from the button.
47. The viewing system of claim 28, wherein:
the interior rearview mirror is configured to cover the sensor.
48. The viewing system of claim 28, wherein:
the interior rearview mirror is configured to be connected to the button and be adjacent the sensor when the button and the sensor are not integral.